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### The Brain & Pollution: How to Protect Yourself & Others Part 3

Pollutants in your products can be just as harmful as pollutants in the air. The previous two parts in this article series covered the effects of environmental pollutants – namely air pollutants – on the brain throughout different stages of life.

The following article will cover dangerous chemicals present in everyday products. Many of these are called “neurotoxins” as their main target is the nervous system. It is especially important to pay attention to these on ingredient lists as your exposure to them is likely high due to frequent usage.

#### A Quick Note on Exposure & Scientific Evidence

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Not all exposure is equal and not all so-called “dangerous” chemicals are going to cause serious health problems. However, raising an alarm is of significance as it will entice individuals to act more cautiously and consciously.

#### Exposure can have different effects on individuals based on:

- The concentration of the chemical in question and the number of regular exposures,
- The likelihood of that chemical being absorbed by the body,
- The way the chemical is metabolized and eliminated by the body,
- The possibility of bioaccumulation (accumulating in various bodily tissues, having a potentially toxic effect over time),
- The health of the individual as certain conditions can make an individual more likely to experience adverse effects,
- And more.



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**Another thing to consider is the presence and/or absence of scientific evidence.**

Researchers are continuously conducting studies on various chemicals and how they can affect the human body. Their findings can be strong, weak, or even contradictory at times. Not all evidence is made equal, but if there is a certain hint towards something being harmful, it does not hurt to look further into it and take preventative actions to avoid it.

Lastly, the lack of evidence or studies on a certain topic by no means indicates anything about its importance or relevance. For example, a lack of evidence on a certain chemical should not be equated with it being safe for use. Oftentimes, such holes in the scientific literature simply show that more research needs to be done.

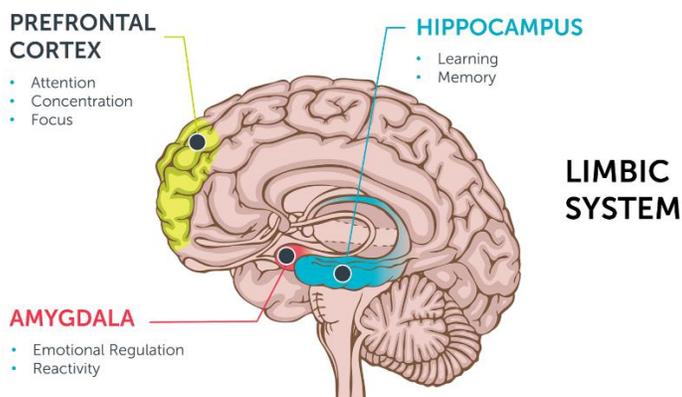
## **Neurotoxins in Your Everyday Life**

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**Aluminum** is a metal found in drinking cans, cookware, and in our external environment. Aluminum can accumulate in brain tissues causing toxicity over time (Yokel, 2000). Effects include neurochemical changes in the brain, some of which have been linked to Alzheimer's disease amongst other neurodegenerative disorders.

**Aspartame** is an artificial sweetener that is often found in foods labelled as "sugar-free". In large quantities, studies show that aspartame can impair the function of important brain chemicals, resulting in symptoms like headaches, insomnia, seizures, and psychological disorders (Humphries et al., 2007).

**Benzene, toluene, and xylene** are more commonly known as **volatile organic compounds (VOCs)**. These are often found in fuels, cleaning products, paint products, varnishes, air fresheners, cosmetics, gasoline, and more. In animal studies, VOCs have been found to interfere with the hippocampal region of the brain which is responsible for learning and memory (Wang et al., 2018).



**Diethanolamine (DEA), triethanolamine (TWA), alkylphenol ethoxylates (APEs), and propylene glycol** are also *volatile organic compounds* frequently found in cleaning products and cosmetics. At high levels, these compounds can accumulate in the body and cause changes in the way that neurons function (Craciunescu et al., 2008). Once more, findings suggest a perturbation in the hippocampal region of the brain.

**Mercury** is a heavy metal found in seafood (mostly fish), amalgam fillings, and water. Mercury has been found to accumulate in brain tissues causing various toxic effects (Bjorkman et al., 2007). In terms of symptoms, the most alarming ones are observed in children as mercury impairs brain development and thereby causes deficits in cognitive capacities (Trasande et al., 2005).

**Phthalates** are plasticizers found in cosmetics, air fresheners, insecticides, food containers, toys, and much more. Researchers have found phthalates to have adverse effects on brain development and brain hormone regulation (Holahan & Smith, 2015).

**This list of neurotoxins can be extended furthermore.** Below is a compressed list of chemicals that can potentially have detrimental effects on the brain (Alban, n.d.):

- **Calcium caseinate** – Food
- **Diacetyl** – Popcorn bags
- **Lead** – Air, soil, water
- **Monosodium glutamate (MSG)** – Food
- **Organophosphate pesticides** – Food



- **Polybrominated Diphenyl Ethers (PBDEs)** – Furniture
- **Polychlorinated biphenyls (PCBs)** – Vehicles/Transportation
- **Polyvinyl chloride (PVC)** – Toys and plastic objects
- **Sodium fluoride** – Water
- **Sucralose** – Food

## Concluding Thoughts

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Neurotoxins are more ubiquitous than one expects and going through their list can be quite overwhelming and confusing. Thus, for more clarification, please make sure to check out this [EHAQ Newsletter \(July 2020\)](#) and [www.EcoLivingGuide.ca](http://www.EcoLivingGuide.ca). This is an excellent article to consult if you want to learn more about recognized labels, apps, and guides that can help you make the right choices when shopping

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